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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/618,751
Filing Date: July 15, 2003
Appellant(s): RONAY, MARIA

Burton A. Amernick
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 23 March 2006 appealing from the Office action mailed 07 November 2005.

(1) Real Party in Int r st

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

10/645,493

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

Claims 1, 4-9 and 20-22 contain(s) substantial errors as presented in the Appendix to the brief. Accordingly, claims 1, 4-9 and 20-22 are correctly written in the Appendix to the Examiner's Answer. Appellant has presented the claims filed 06 August 2004, and not the claims submitted 15 March 2005, after final, and entered with the filing of the RCE filed 21 April 2005. A correct copy of the claims is provided

(8) Evid nc R li d Upon

Chemical Formula and properties of Poly(tetrafluoroethylene), copy included, http://www.polymerprocessing.com/polymers/PTFE.html

Web article: "Friction", The Physics Hypertextbook, 1986-2004. copy included.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4, 6, 8, and 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Molnar, 6,283,829.

Regarding claims 1, 20 and 22, Molnar, discloses a plurality of embodiments of methods for planarizing a surface which is formed on a substrate which comprises providing on the surface to be planarized a liquid slurry composition comprising abrasive particles and solid lubricant particles (column 22, lines 65 through column 23, lines 50); wherein the lubricant particles are preferably boundary lubricants that contain atoms of fluorine (column 27, lines 3-6). Poly (tetrafluoroethylene), fluoroethylene-propylene copolymers, perfluoroalkoxy resins, polyvinylidene fluoride and mixtures thereof, as claimed by applicant; are all compounds with atoms of fluorine (for example, the chemical formulation for poly (tetrafluoroethylene) (a polymeric compound) is C_2F_4.

See the attached evidence "Poly(tetrafluoroethylene")). The amount of the solid lubricant particles is about 0.3 to about 10% by weight; (column 28, lines 5-19) and contacting said surface with a polishing pad.

Regarding claim 4, Molnar, in a embodiment where the lubricant is part of the polishing pad, discloses that a suitable lubricant for CMP (chemical mechanical polishing) is poly (tetrafluoroethylene), which inherently has a coefficient of friction of 0.03 to about 0.3. See the attached evidence "Friction".

Regarding claim 6, Molnar discloses the abrasive can be silica, (column 23, lines 29-35.

Regarding claim 8, Molnar, discloses the slurry can be an aqueous slurry (for example, column 28, lines 56-60).

Regarding claim 21, Molnar, column lines , discloses the surface to be polished is a thin film.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molnar, 6,283,829. Molnar discloses that the liquid slurry or composition may contain abrasive particles, but does not disclose the percentage by weight of the particles; and discloses the use of solid lubricant particles, but does not disclose the size of the

lubricant particles. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided Molnar with the required sizes of lubricant particles and amounts of the abrasive particles , since it has been held that where the general conditions of a claim are disclosed in the prior ad, discovering the optimum or workable ranges involves only routine skill in the ad. In re Aller, 105 USPQ 233. Here, the relative sizes and amounts of the particles in the slurry would depend on the type, thickness and desired material removal of the material being planarized.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Molnar '829 in view of Chang et al 2003/021 1743 (filed May 7, 2002). Molnar does not explicitly disclose that a surfactant may be added to the slurry. Chang et al, in a slurry for CMP applications, teaches that it is old and well known to use surfactants in CMP slurries, to maintain slurry particle dispersion. It would have been obvious to one of ordinary skill in the ad at the time the invention was made to have provided Molnar with a surfactant as taught by Chang et al, (0073 lines 12-14, to maintain particle dispersion.

(10) Response to Argument

Appellant argues that Molnar fails to anticipate the present invention since, among other thins, Molnar deals with using polishing pad that require abrasive particles contained therein (e.g. fixed abrasive finishing elements). On the other hand, the process of this invention can be practiced and is preferably practiced using pads such as polyurethane pads that do not require abrasive particles.

The examiner respectfully disagrees with appellant's interpretation of Molnar. It is the examiner's position that Molnar is concerned with the use of lubricant in a CMP

processing method, to reduce friction between the substrate and polishing pad, and discloses a variety of ways in which the lubricant can be used. Appellant is correct in that one of the ways Molnar provide the lubricant is as part of the composition of a fixed abrasive polishing pad. However, Molnar also discloses that the lubricant can be provided in an aqueous slurry containing abrasive particles. That this is not a preferred embodiment is moot. MPEP 2131.05 states in part

> A reference is no less anticipatory if, after disclosing the invention, the reference then disparages it. The question whether a reference "teaches away" from the invention is inapplicable to an anticipation analysis. Celeritas Technologies Ltd. v. Rockwell International Corp., 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522-23 (Fed. Cir. 1998) (The prior art was held to anticipate the claims even though it taught away from the claimed invention. "The fact that a modem with a single carrier data signal is shown to be less than optimal does not vitiate the fact that it is disclosed."). See also Atlas Powder Co. v. IRECO, Inc., 190 F.3d 1342, 1349, 51 USPQ2d 1943, 1948 (Fed. Cir. 1999) (Claimed composition was anticipated by prior art reference that inherently met claim limitation of "sufficient aeration" even though reference taught away from air entrapment or purposeful aeration.).

Here, while an aqueous slurry containing abrasive particles and lubricant may not be Molnar's preferred embodiment, he does disclose that such are known. It is noted that appellant has not claimed a polishing pad without abrasive particles, and therefore has not claimed their preferred embodiment. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See

In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Appellant's claims are broad enough to include abrasive pads.

Appellant also argues that the claiming of a more specific combination within a broader group of possibilities avoids a lack of novelty rejection, that the test for anticipation is whether the claims read on the prior art disclosure, not on what the references broadly teach. The examiner agrees. Here, however, while Molnar does disclose a plurality of embodiments or combinations, it is the examiner's position that the claims of the appealed application do read on the disclosure of Molnar, as set forth above. Appellant further cited *Akzo N.V. v. U.S. International Trade Commissioner* 1 USPQ 1241 (fed. Cir. 1986), in that there is no anticipation when one would have had to "randomly pick and choose among a number of different polyamides, a plurality of solvents and a range of inherent viscosities" to reach the claimed invention. This is not the case here. Molnar does disclose methods for planarizing a surface which is formed on a substrate which comprises providing on the surface to be planarized a liquid slurry composition comprising abrasive particles and solid lubricant particles (column 22, lines 65 through column 23, lines 50); wherein the lubricant particles are preferably boundary lubricants that contain atoms of fluorine (column 27, lines 3-6), and contacting the substrate with a polishing pad. That Molnar also discloses other embodiments, or that other compounds or materials are also suitable, does not negate the teaching of Molnar of appellant's invention as claimed.

Regarding the rejection of claims 5 and 7 under 35 USC 103, appellant argues that as Molnar suggests the use of lubricant in fixed abrasive pads, that there is no

motivation to employ a solid lubricant where the abrasive particles are already contained in the polishing composition. The examiner again disagrees with appellant's interpretation of Molnar. Molnar does disclose a slurry of abrasive particles and solid lubricant particles. Molnar does not explicitly disclose the size of the abrasive particles, or the amount of abrasive used. It is the examiner's position that one of ordinary skill in the art, given the teaching of Molnar that it is known to provide a CMP process with a slurry of abrasive and solid lubricant particles, would consider the size and amount of abrasive particles obvious, since it has been held that where the general conditions of a claim are disclosed in the prior ad, discovering the optimum or workable ranges involves only routine skill in the ad. In re Aller, 105 USPQ 233. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). The examiner did not use impermissible hindsight, because one of ordinary skill in the art would know that the amount and size of abrasive would be varied based on the material being processed, and the rate of material removal desired.

Appellant has not presented any specific arguments against the examiner's reliance on Molnar as modified by Chang et al, except to state that claim 9 is patentable for the same reasons as claim 1.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

M. Rachuba
Primary Examiner

Conferees:

Joseph Hail

Boyer Ashley

Appendix of Claims (Correct Listing of Claims)

I , A method for planarizing a surface which is formed on a substrate which comprises providing on the surface to be planarized a liquid slurry composition comprising abrasive particles and solid lubricant particles; wherein the lubricant particles are selected from the group consisting of poly (tetrafluoroethylene), fluoroethylene-propylene copolymers, perfluoroalkoxy resins, polyvinylidene fluoride and mixtures thereof; and wherein the amount of the solid lubricant particles is about 0.3 to about 10% by weight; and contacting said surface with a polishing pad.

2.(Cancelled)

3.(Cancelled)

4. The method of claim 1 wherein the lubricant particles have a coefficient of friction of 0.03 to about 0.3.

5. The method of claim 1 wherein the lubricant particles have a particle size of 0.05 to about 18 microns.

6. The method of claim 1 wherein the abrasive particles comprise a member selected from the group consisting of ceria, alumina, silica, titania, zirconia, polymer particles, organic/inorganic composite particles, and combinations.

7. The method of claim 1 wherein the amount of the abrasive particles is about 0.1 to about 20 percent by weight.

8. The method of claim 1 wherein the slurry is an aqueous slurry.

9. The method of claim 1 wherein the composition further comprises a surfactant.

10-19 (Cancelled)

20. A method for planarizing a surface which is formed on a substrate which comprises providing on the surface to be planarized a liquid composition comprising abrasive particles and solid lubricant particles; abrasive particles and solid lubricant particles; wherein the lubricant particles are selected from the group consisting of poly (tetrafluoroethylene), fluoroethylene-propylene copolymers, perfluoroalkoxy resins, polyvinylidene fluoride and mixtures thereof; and wherein the amount of the solid lubricant particles is about 0.3 to about 10% by weight; and contacting said surface with a polishing pad.

21. The method of claim 20 wherein the surface to be polished is a thin film.

22. The method of claim 1 wherein the lubricant particles comprise poly(tetrafluoroethylene).